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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/010,412	12/07/2001	Russel Shirley	AMDA.499C1 (TT4002/03C1)	6042
40581	7590	02/09/2006	EXAMINER	
CRAWFORD MAUNU PLLC 1270 NORTHLAND DRIVE, SUITE 390 ST. PAUL, MN 55120			RODRIGUEZ, PAUL L	
			ART UNIT	PAPER NUMBER
			2125	
DATE MAILED: 02/09/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/010,412

Applicant(s)

SHIRLEY ET AL.

Examiner

Paul L. Rodriguez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 11/21/05 has been entered.

2. The amendment filed 11/21/05 has been received and considered. Claims 14-24 are presented for examination.

Claim Objections

3. Claim 14 is objected to because of the following informalities: Claim 14 line 11 refers to "the useful life", would be better as an or a useful life to avoid any possible antecedent issues in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 21 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for using degradation data to determine the useful life as it is tracked through the system, found on page 8 lines 12-14 and "continually updates mask data sets as

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indicated by line 320” on page 8 lines 14-15, this does not reasonably provide enablement for “useful life of each mask is continuously updated as the mask moves throughout the wafer processing facility” as claimed in claim 21. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. Continuously implies a constant and unbroken update of the mask data, however according to reference number 320, the mask data is only updated when each mask moves to a new location, therefore the updating of mask data is not considered continuous.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 recites the limitation "the new location identification code" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 14, 16, 17 and 19-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Wiesler et al US Pub 2001/0047222 (*U.S. Provisional Application 60/199453*). The claimed invention reads on Wiesler et al as follows:

Wiesler et al discloses (claim 14) a computer-based automated method for tracking the movement of masks (reticles) used in a wafer processing facility (paragraphs 5, 6, *page 5 section 1.1*), the masks being moved in mask pods (reticle carriers, paragraphs 5, 6, *page 5 table 1-11 "reticle carrier", page 15 section 4.3 lines 1-6*), the method comprising for each mask, generating mask data that includes a mask identification code (figure 3A, paragraph 19, *table 4-5*), using a computer (reference number 204, *figure 3-1, page 7 TransNet RMS "server"*) to process the mask data, including cross-referencing respective mask identification codes to pod identification codes (figure 3A, reticle ID, reticle carrier ID, paragraph 19, claims 3, 4, *table 4-5, reticle ID, reticle carrier ID*) and updating the mask data to include a facility location identification code (storage of reticle in stocker, figure 3B, current location, *table 4-5 page 28-29 section 4.6*), conducting a degradation analysis on each mask that includes a comparison of the mask data to a mask baseline specification so as to generate degradation data for each mask (figure 3B, inspection, figure 3E, inspection results, paragraph 20, *page 25 section 4.5.3*), and analyzing and tracking the mask degradation data to determine the useful life of each mask (paragraph 20, *page 25 section 4.5.3*) (claim 16) further including continuously updating the mask data to reflect the new location identification code in response to the mask being routed to a new location (figure 3B, paragraph 19, 20, current location, processing station, paragraph 15, *table 4-5, current location, page 16 section 4.3.1 "add or update the additional usage tracking information, page 28-29 section 4.6*), (claim 17) wherein conducting a degradation analysis on

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each mask includes comparing the mask data to desired mask attributes (figure 3B, “inspection”, figure 3E inspection results, paragraph 20, figure 3E “Inspection max”, “uses between inspections”, “clean max”, **page 25 section 4.5.3**), (claim 19) wherein determining the useful life of each mask includes comparing the mask data with a predefined level of mask degradation (paragraph 20, determination of cleaning, repair needs has some inherent predefined level, **page 25 section 4.5.3**), (claim 20) wherein the useful life of each mask is determined as the mask's movement is tracked (figure 3B, paragraph 19, 20, includes current and last locations, it is clear that the movement is tracked, movement would also be tracked when reticle is sent for the inspections, figure 3B “location inspection”, **table 4-5, current locations, page 28-29, section 4.6**) (claim 21) wherein the determined useful life of each mask is continuously updated as the mask moves throughout the wafer processing facility (figure 3B, paragraph 19, 20, includes current and last locations, it is clear that the movement is tracked, considered continuous, **table 4-5, current locations, page 28-29, section**), (claim 22) wherein the degradation data includes data corresponding to the effects of cleaning the mask (figure 3E, “clean max”, **table 4-7**) and (claim 23) wherein the degradation data includes data corresponding to the effects of handling the mask (figure 3B, “times inspected”, paragraph 19, 20, figure 3C, “repair count”, figure 3E “inspection max”, “uses between inspections”, “uses between cleaning” all related to effects of handling, **tables 4-5, 4-7, paragraphs 4.5.5, 4.5.7**).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wiesler et al US Pub 2001/0047222 (*U.S. Provisional Application 60/199453*) in view of Terao (U.S. Pat 5,191,535).

Wiesler et al teaches most all of the instant invention as applied to claim 14 above, Wiesler et al fails to teach including tracking an event associated with a select wafer lot, the event tracking including matching the mask identification code with the select wafer lot.

Terao teaches using the computer to track an event associated with a mask (reticle is functionally same as a mask) and a wafer lot to an event on a processing line (abstract, col. 1 lines 32-55, "previous step").

Wiesler et al and Terao are analogous art because they are both directed to a reticle or mask handling systems.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the matching of reticles to wafer lots of Terao in the reticle

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management system of Wiesler et al because Terao teaches that the identification of a “to be processed lot” and mask prior to processing by a production unit reduces standing time of the production unit, therefore reducing overall production time (col. 3 lines 5-12), using a computer control system is also known and taught to provide faster processing of mask data, which was previously done manually (col. 1 lines 10-20), these reasons provide adequate motivation to combine the teachings of these references.

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wiesler et al US Pub 2001/0047222 (*U.S. Provisional Application 60/199453*) in view of Wang et al (U.S. Pat 5,859,964).

Wiesler et al teaches most all of the instant invention as applied to claim 14 above, Wiesler et al fails to teach modeling the mask degradation.

Wang et al teaches a system and method for performing real time data acquisition, process modeling and fault detection of a wafer fabrication process (abstract, title, all)

Wiesler et al and Wang et al are analogous art because they are both directed to wafer fabrication.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made utilize the modeling and fault detection of Wang et al in the reticle management system of Wiesler et al because Wang et al teaches a fault detector that uses process event information in combination with the process parameter signal samples to perform improved fault detection (col. 3 lines 21-30) and the present invention collects both process event information generated by the process equipment and process parameter data without reliance on the process equipment, the system advantageously acquires the process parameter

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data at a constant and relatively high sampling rate (col. 6 lines 29-34, also pertinent to instant application claim 21).

11. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wiesler et al US Pub 2001/0047222 (*U.S. Provisional Application 60/199453*) in view of DeWitt (U.S. Pat 5,214,486).

Wiesler et al teaches most all of the instant invention as applied to claim 14 above, Wiesler et al fails to teach wherein the degradation data includes data corresponding to the effects of particle contamination of the mask.

DeWitt teaches degradation data includes data corresponding to the effects of particle contamination of the mask (abstract, col. 1 lines 7-10, col. 5 lines 52-60, claim 12).

Wiesler et al and Wang et al are analogous art because they are both directed to wafer fabrication.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was use the data corresponding to particle contamination of the mask of DeWitt in the reticle management system of Wiesler et al because DeWitt teaches that as the mask and reticle designs continue to evolve in complexity and resolution, the detection of submicron contaminants on a photo mask becomes critically important, the high reliability requirement of the integrated circuits (ICs) demands very stringent quality assurance criteria to produce and use absolute defect-free masks and a single particle in a mask can cause manufacturing defects and render a sequence of very costly, thus it places great importance to detect and remove any contamination or particle from the mask before the IC manufacturing process begins (col. 1 lines 12-30).

Response to Arguments

12. Applicant's arguments filed 11/21/05 have been fully considered but they are not persuasive.

Applicant argues that the rejection set forth in the office action or decision do not address the aspect of covering mask life forecasting. Examiner would like to point out that the claims do not contain a limitation of "forecasting mask life". They do contain degradation analysis and determining the useful life of each mask but not forecasting.

Applicant argues that the office action fails to teaches a comparison of the of the mask data to a mask baseline specification. Examiner would like to point out that while this is disclosed in the specification, the claims are silent on "baseline specification".

Applicant argues that '222 appears to be directed to reticle history and not forecasting. Again claims are silent on forecasting which they do determine a useful life of each mask, this is considered different then forecasting. As a reminder, the data of Wiesler et al includes "clean max", figure 3E, which is the maximum number of times the reticle can be cleaned and also "Times cleaned" figure 3A which both provide an indication of a useful life indication.

Arguments not persuasive, claims stand rejected.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lehman (U.S. Pub 2003/0048939) – teaches a method of inspecting articles and predicts the timing of replacement reticles based upon degradation.

Conboy et al (U.S. Pat 6,457,587) – teaches reticle degradation modeling and mask degradation.

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Enichen et al (U.S. Pat 6,040,095) – teaches determining the useful life of a mask and evaluates the quality of the mask.

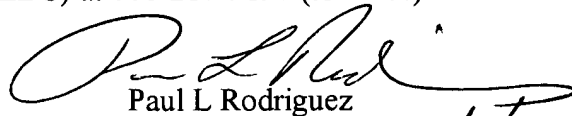
Lantz et al (U.S. Pat 5,886,896) – teaches that it is well known that yield is affected by particle contamination in the processing tools.

Tegethoff (U.S. Pat 5,539,652) – teaches modeling and simulation for the determination of a useful life of a product.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul L. Rodriguez whose telephone number is (571) 272-3753. The examiner can normally be reached on 6:00 - 4:30 T-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Paul L Rodriguez
Primary Examiner
Art Unit 2125
2/8/06

PLR
2/8/06